THURSDAY, APRIL 21, 1892.

THE YAHGAN.

Mission Scientifique de Cap Horn. Tome VII. "Anthropologie, Ethnographie." Par P. Hyades et J. Deniker. (Paris: Gauthier-Villars et Fils, 1891.)

THIS volume contains the record of an important part of the work done by a French scientific Expedition which spent a year at Tierra del Fuego. The Expedition was organized in June 1882 by a Commission appointed by the Academy of Sciences; and in November 1883, after its return to France, it presented to the Academy its preliminary reports. Since the latter date, its results have been embodied in a series of volumes, prepared under the control of the Commission, and published under the auspices of the Ministries of Marine and Public Instruction. The first volume contains a history of the voyage, by the late L. F. Martial, the Commander of the *Romanche*, in which the Expedition sailed. The second volume, by L. Lephay, is devoted to meteorology; the third, by F. O. Le Cannellier, to terrestrial magnetism; the fourth, by P. Hyades, to geology; the fifth, by Hariot, Petit, Bescherelle, Massalongo, and Franchet, to botany. It was originally intended that zoology should also be dealt with in a single volume; but the material obtained by the Expedition was so rich and of so much scientific importance that three volumes were found to be necessary. The present volume, nominally the seventh, is really the ninth, and completes the series. Although Dr. Deniker is associated with Dr. Hyades as one of the authors of this work, he did not accompany the Expedition. He has rendered, however, important service in the working-up of the anthropological and ethnographical data brought back from Cape Horn.

The book is one in which serious students of anthropology will find much to interest them. It offers a great mass of original observations, made, as Dr. Hyades explains, without any preconceived idea; and they are not only arranged methodically, but set forth in a style of admirable simplicity and clearness. The volume is also enriched with numerous plates, some of which are finely-executed heliogravures.

The Fuegians are divided into three groups—the Ona, the Alakalouf, and the Yahgan. The Ona inhabit the great island of Tierra del Fuego from the southern coast of the Strait of Magellan to near the northern shore of Beagle Channel. They are probably a branch of the Patagonians, and the Expedition had no opportunity of seeing any of them. The islands and a part of the mainland to the west of the Ona are inhabited by the Alakalouf, to the south of whom are the Yahgan. These two peoples speak different languages, but seem to have essentially the same racial characteristics. It was among the Yahgan that Dr. Hyades carried on his studies, and to them the volume almost wholly relates.

The Expedition brought back the body of a Yahgan who died while the *Romanche* was at Orange Bay, and who during his lifetime had been subjected to various careful measurements. They also brought the skeleton of a woman and the skeletons of five children; three skulls (two of men, one of a woman); two incomplete skeletons, and various detached bones. These remains are made the subject of a thorough anatomical study which is the more valuable because the results at which the authors have arrived are compared with those reached by previous investigators. There is also an elaborate chapter on morphological characters, setting forth various classes of facts noted in the course of accurate observation of the physical qualities of living persons. The Yahgan are mesocephalic, the men having a tendency to be dolichocephalic, the women to be brachycephalic. Most of the South American aborigines are decidedly brachycephalic; but here and there tribes are found whose skulls resemble those of the Yahgan. This is especially true of the Botocudos, who are also like the Yahgan in being rather below the average height of other natives, and in the form of the face, the nose, and the mouth. Various ancient skulls which have been found at Lagoa Santa in Brazil, at Pontimelo in the Argentine Republic, and elsewhere, have the same general structure as those of the Botocudos and the Yahgan. The authors therefore conclude that these and some other tribes are more or less pure remnants of a race which at one time occupied the greater part of South America, and were displaced by brachycephalic peoples, with whom the survivors to some extent mingled. Of these brachycephalic peoples, the Patagonians alone are very tall, the rest being of moderate height. All, however, whether tall or short, are of a different physical type from the Yahgan.

The Yahgan live chiefly on fish and mollusks. They also eat any kind of bird they can catch, and are fond of the flesh of the whale, the seal, and the otter. When pressed with hunger, they will eat the fox, but never dogs or rats, the latter being held in abhorrence. Fishing is left entirely to the women, while the men hunt. They have splendid powers of digestion, and assimilate their food so readily that they sometimes become fat in the course of a single day. Their huts are made of branches or of the trunks of trees, the interstices being imperfectly filled up with moss or bark, with fragments of canoes or with sealskin. These slight dwellings are put together in a few hours, and as they admit the wind freely, the air in them is generally fresh. In the centre is a fire, around which the inmates sleep at night, and at other times, when they have nothing else to do, sit talking and laughing. The Yahgan lose early the attributes of youth, but often retain their vigour to a great age. They are very courageous, and enjoy games which test their physical strength.

Among the women intimate friendships are not uncommon, but men generally form attachments to one another only if they have been brought up together. Children are tenderly cared for by their parents, who in return are treated by them with affection and deference. Some men have two or more wives, but monogamy is the rule. The girls do not choose their own husbands; they must take those whom their parents provide for them. Before marriage they are allowed great liberty, but when they become wives they have less freedom, the husbands being extremely jealous, and being supported by public opinion in punishing severely any departure from conjugal duty. This account differs from that of some other observers, but Dr. Hyades is confident that his statements on the subject are strictly accurate. Both girls and mar-

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ried women are remarkable for the modesty of their demeanour, and expect to be treated respectfully.

When the Yahgan approach a strange vessel in their canoes, they might be taken for abject beggars; but on shore visitors obtain a different impression. There the natives display perfect independence, and they readily take offence at anything which they interpret as a slight. They are far from having a community of goods, every man claiming as his own that which he himself has found or made; but they are of a generous disposition, and like to share their pleasures with others. That they have a sense of right and wrong Dr. Hyades does not doubt, but their moral distinctions are not always very sharply drawn. They are accomplished liars, and the only disadvantage of a lie seems to them to be that the truth is sometimes apt to be found out. A man convicted of theft, however, will show that he is ashamed of his deed; and murder is punished with death. The Yahgan have often been accused of cannibalism, but Dr. Hyades agrees with Mr. Bridges, who knows them thoroughly, in regarding this charge as utterly without foundation.

They can occupy themselves continuously for a considerable time with any employment to which they are accustomed, such as the making of a harpoon; but it is hard for them to devote attention to anything with which they are not familiar. When questioned on any subject, they soon become confused, and give answers at random. They do not divide time or count beyond three, and have remarkably short memories. But they are good observers of the signs of the weather, of plants, and of animals; and they have an extraordinary power of mimicking attitudes, gestures, and cries, although they have no such faculty of imitation as leads to the production of new instruments, utensils, or other useful objects. They are wholly unable to make anything, however simple, after a given model. They often have dreams, but do not generally appear to attach to them any significance. They have neither poetry, nor history, nor traditions; and Dr. Hyades asserts that the members of the Expedition never saw among them the faintest trace of religious ideas or sentiments. Those of them who are directly under the influence of English missionaries have learned to live regular lives, but have lost many aptitudes possessed by the savage Yahgan; and they easily fall victims to various forms of disease which have been imported with civilization.

The language of the Yahgan is dealt with in a long and most instructive chapter; and interesting details are given as to the occupations of the people, their domestic customs, and many other subjects. Of the plates, to which we have already referred, we need only say that they alone would have sufficed to make the work an invaluable contribution to ethnographical and anthropological science.

QUANTITATIVE ANALYSIS.

Quantitative Chemical Analysis. By Frank Clowes, D.Sc. Lond., and J. Bernard Coleman. Pp. 309. (London: J. and A. Churchill, 1891.)

THIS book embodies the material usually included in a complete course of elementary instruction in quantitative analysis. It is divided into five parts. Part I. treats of the balance, the determination of physical constants, the purification of substances, and preliminary analytical processes generally. The more important simple gravimetric estimations are grouped in Part II.; and are followed, in Part III., by descriptions of the methods and the more common determinations comprised under volumetric analysis. In Part IV. are classed more complex exercises, involving both gravimetric and volumetric processes. Here are to be found analyses of ores, technical products, fuel, articles of food and drink, including complete analyses of milk, butter, sugar, and partial analyses of wine, beer, and tea. The valuations of tannins and soaps are next given, and the part concludes with a section on the typical methods of organic analysis. Part V. is devoted to a description of the ordinary methods of technical gas analysis.

The above brief summary of contents will show that the aim of the volume is eminently practical; and with regard to the purely chemical sections little but praise can be expressed, both at the general and detailed treatment of the subject. All the more important estimations have been included, and the practical points to be observed in accurate work are clearly stated. A noteworthy feature, and one especially helpful to the student, is the brief statement of the principle of each estimation, in a sentence or two, before the detailed process is described. The accounts of food and gas analysis are both useful and interesting, and are seldom met with in manuals of this kind.

There can be no doubt but the book will be a serviceable guide to the student, and aid to the teacher.

One or two minor points, however, seem worthy of criticism. It is stated in the preface that, in order to economize space, "unnecessary theoretical matter" has been omitted, and apparently this idea has been carried too far. For example, it is but just to tell the student why in estimating sulphur as barium sulphate, nitric acid is first expelled. Knowledge of a similar kind, more especially in the physical portions of the book, is occasionally left out, and descriptions are thus rendered more or less empirical.

If it is considered necessary to give methods for determining specific gravities, boiling-points, &c., in a work of this kind, the accounts should be modern, and the accuracy aimed at should be comparable with that attained in the chemical sections. Absolute specific gravity—or shortly, specific gravity—as used in the book, with no temperatures of comparison attached, is now generally taken to be the weight of unit volume; such a definition is not hinted at, and none of the methods given serve to obtain the absolute specific gravity. The time-honoured but obsolete pyknometer, closed by a perforated stopper, still finds a place, and the original Sprengel pyknometer is figured, although it might well be replaced by Perkin's more generally useful modification.

With regard to the estimations of boiling-point, it should have been clearly stated that to take the barometric pressure was a necessary part of any trustworthy determination. In correcting for the exposed column of the thermometer, one of the more recent coefficients might have been given in place of the oldest and least satisfactory. What is supposed to be the mean tem-

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